

CLAIMS

What is claimed is:

- 5 1. A method for reducing ash agglomeration in a parallel entrainment fluidized bed gasifier/combustor system having an operating temperature range, said method comprising the steps of:
 providing a carbonaceous feedstock;
 supplementing said carbonaceous feedstock with a component sufficient to
10 alter the low temperature eutectic of ash produced by combustion of the feedstock to prevent aggregation of said fluidized bed due to ash melting in the operating temperature range of the gasifier/combustor;
 introducing said carbonaceous feedstock into a parallel entrainment fluidized bed gasifier/combustor system wherein said carbonaceous feedstock is
15 converted into a desired gas mixture and ash.

 2. The method of Claim 1, wherein said component sufficient to alter the low temperature eutectic of the feedstock is MgO.

 3. The method of Claim 1, wherein between 1% and 25% by weight MgO is
20 added to said carbonaceous feedstock.

 4. The method of Claim 1, wherein at least 2% by weight MgO is added to said carbonaceous feedstock.
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 5. The method of Claim 1, wherein between 2% and 10% by weight MgO is added to said carbonaceous feedstock.

 6. An apparatus for reducing erosion at a piping bend in a fluidized
30 particulate piping system comprising:
 a sand retention cavity positioned at the piping bend to receive and retain a portion of said fluidized particulate, said fluidized particulate serving as an

ablatable buffer to protect the surface of said piping bend from erosion by said flow of said particulate impacting said wall.

7. An apparatus for facilitating the flow of sand and char fragments from a first compartment to a second compartment while minimizing the flow of gases between said first and second compartments, said apparatus comprising:

a chamber for receiving said flow of sand and char fragments from said first compartment, said chamber including an inlet nozzle disposed to deposit said sand and char mixture into the lower portion of said chamber; and

10 an outlet disposed above the point at which said nozzle deposits said sand and char mixture into said chamber, wherein said outlet is disposed to allow the gravitationally driven flow of sand and char from said chamber to said second compartment;

15 wherein, when operating, said chamber maintains a quantity non-fluidized sand and char disposed between said inlet nozzle and said outlet, said sand and char acting to maintain a substantially gas resistant seal between said first and second compartments.